

# FEASIBILITY STUDY


US 158

From NC 12 at Whalebone to NC 12 at Southern Shores  
Dare County

R-3419

Prepared by  
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Date

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### I. General Description

This feasibility study describes proposed improvements to US 158 from NC 12 at Whalebone to NC 12 at Southern Shores. It is proposed to widen the roadway, within the existing right-of-way, to a 6-lane and 7-lane facility as follows:

Segment	Proposed Cross-Section	Length
US 64-264 to Baymeadow Drive in Nags Head	7-lane shoulder section with an 84-foot (25.6-m) wide travel-way and 8-foot (2.4-m) wide paved shoulders	1.4 miles
Baymeadow Drive to Woodhill Drive in Nags Head	6-lane median divided section with 12-foot (3.6-m) wide travel lanes, a 16-foot (4.9-m) wide raised median, and 8-foot (2.4-m) wide paved shoulders	4.0 miles
Woodhill Drive in Nags Head to Putter Lane in Kitty Hawk	7-lane curb-and-gutter section with 12-foot (3.6-m) wide travel lanes and 8-foot (2.4-m) wide berms	9.2 miles

The location of the recommended improvements and the corresponding cross sections is shown on Figure 1 and Figure 2.

The total cost of construction and utility relocation (no right-of-way required) is estimated to be \$31,000,000 as follows:

Utility Relocation	-----	\$ 3,500,000
Construction	-----	<u>27,500,000</u>
Total	-----	\$31,000,000

This study is the initial step in the planning and design process for this project and is not to be considered the product of exhaustive environmental or design investigations. The purpose of this study is to describe the alternative treatments

including costs, and identify potential problem areas that deserve consideration in the planning and design phases.

## **II. Existing Conditions**

US 158 is designated as a rural minor arterial on the North Carolina Statewide Functional Classification System and as a major thoroughfare on the Nags Head-Kill Devil Hills Thoroughfare Plan.

The purpose of this project is to increase the capacity of US 158, to relieve the congestion generated by the peak tourist season traffic, and to improve safety conditions for pedestrians and turning traffic.

The existing roadway is generally a 5-lane section, partially with curb-and-gutter and partially with rural shoulders. The roadway includes 20 traffic signals within the project terminals.

At the south project terminal, US 158 is the terminal point for US 64-264 eastbound and the roadways intersect US 158 Business and NC 12. The intersection is controlled by traffic signals and directional islands.

From Putter Lane in Kitty Hawk to the north project terminal, the US 158 travelways are divided by a median. The center-turn lane is dropped at Putter Lane and two travel lanes proceed northbound to NC 12 and two travel lanes approach Putter Lane from the north.

The existing right-of-way along US 158 is 150 feet (45.7 m) wide.

Development along the project corridor is heavy and is made up of sections of residential, commercial, and undeveloped properties. Also, the Wright Brothers Memorial and Jockey's Ridge State Park are located adjacent to US 158 in Kill Devil Hills.

A breakdown of the existing development and existing roadway cross sections is included on Figure 3.

The current (1995) Average Daily Traffic (ADT) volume on US 158 is estimated to range from a low of approximately 27,400 vehicles per day near Southern Shores to a high of approximately 32,800 vehicles per day near Ocean Bay Boulevard in Kill Devil Hills. The projected design year (2020) volumes are expected to reach approximately 46,200 vehicles per day and 50,600 vehicles per day respectively.

Based on traffic projections and the large number of signalized intersections, it is estimated that most of US 158 is currently operating at a Level of Service D with some sections operating at a Level E. Without upgrading, it is anticipated that all of US 158, within the project boundaries, will be operating at a Level of Service F by the design



year. The addition of the proposed lanes will improve the operation to a Level of Service C and will allow it to operate at Level E in the design year.

During the three-year period from May 1, 1992 to April 30, 1995, there were 601 accidents reported on US 158 within the project limits. There were 6 fatalities and 234 non-fatal injuries reported. These accidents resulted in an accident rate of 112.6 accidents per 100 million vehicle miles (Acc/100 MVM), compared to a statewide average of 268.7 Acc/100MVM for all urban US routes in North Carolina, in 1994. The most prevalent accident types were rear-end (34%), left-turn (24%), and angle (12%). The recommended cross sections will offer the potential for reduction of these types of accidents.

### III. Recommendations

It is proposed to widen US 158 from NC 12 at Whalebone to NC 12 at Southern shores. The roadway will be widened, within the existing right-of-way, to a 6-lane and 7-lane facility as follows:

Segment	Proposed Cross-Section	Length
US 64-264 to Baymeadow Drive in Nags Head	7-lane shoulder section with an 84-foot (25.6-m) wide travel-way and 8-foot (2.4-m) wide paved shoulders	1.4 miles
Baymeadow Drive to Woodhill Drive in Nags Head	6-lane median divided section with 12-foot (3.6-m) wide travel lanes, a 16-foot (4.9-m) wide raised median, and 8-foot (2.4-m) wide paved shoulders	4.0 miles
Woodhill Drive in Nags Head to Putter Lane in Kitty Hawk	7-lane curb-and-gutter section with 12-foot (3.6-m) wide travel lanes and 8-foot (2.4-m) wide berms	9.2 miles

Also, within the project terminals, 20 existing traffic signals should be upgraded.

The location of the recommended improvements and the corresponding cross sections is shown on Figure 1 and Figure 2. A detailed listing, by segment, of the existing and proposed cross sections is shown on Figure 3.

At the south project terminal, the roadway should transition to meet the existing 5-lane cross section of US 64-264.

At the north project terminal, the roadway should transition just north of Putter Lane to meet the existing 5-lane section.

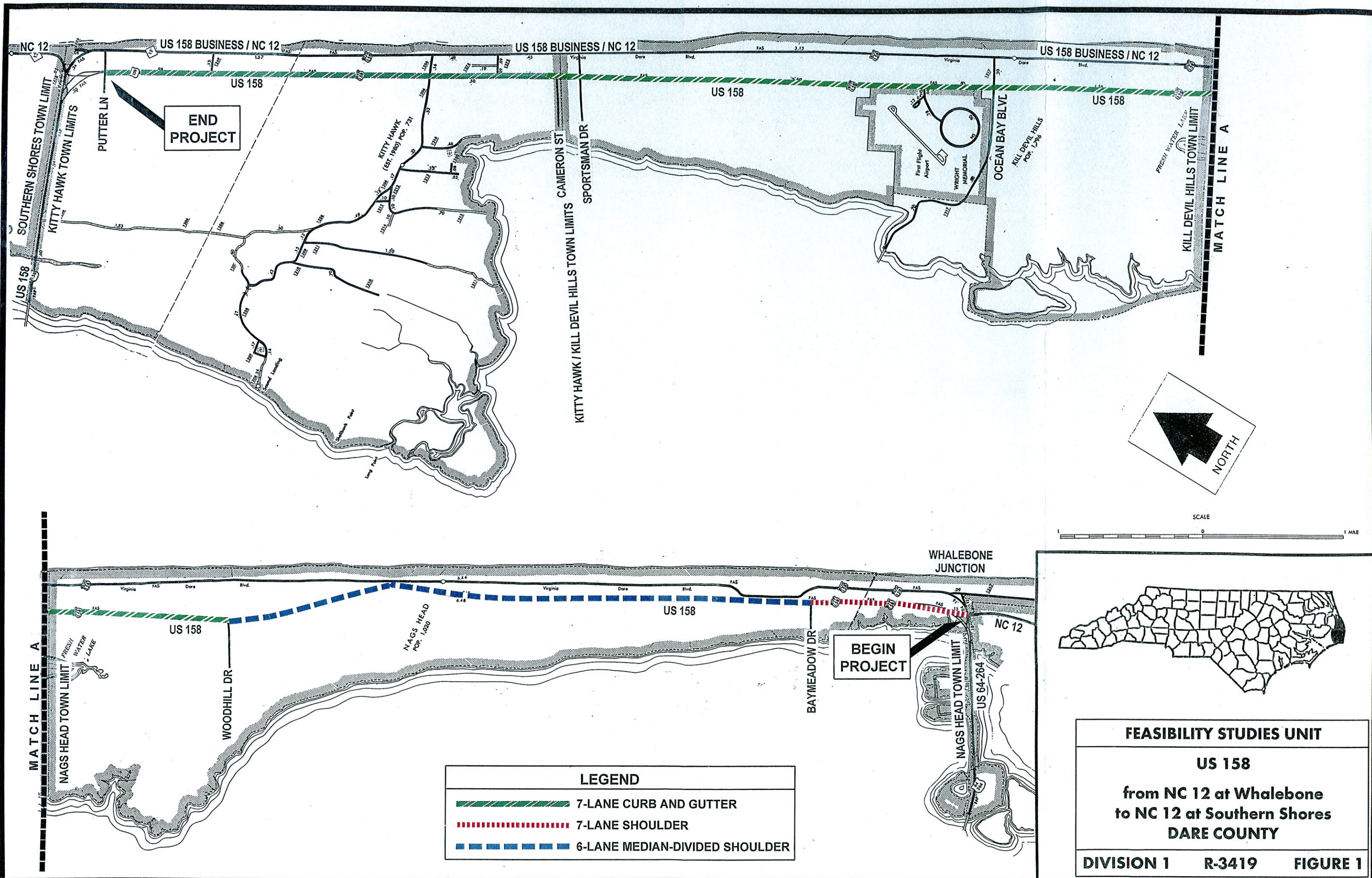
The total cost of construction and utility relocation (no right-of-way required) is estimated to be \$31,000,000 as follows:

Utility Relocation	-----	\$ 3,500,000
Construction	-----	<u>27,500,000</u>
Total	-----	\$31,000,000

#### IV. Other Comments

An environmental screening was not conducted for this project.





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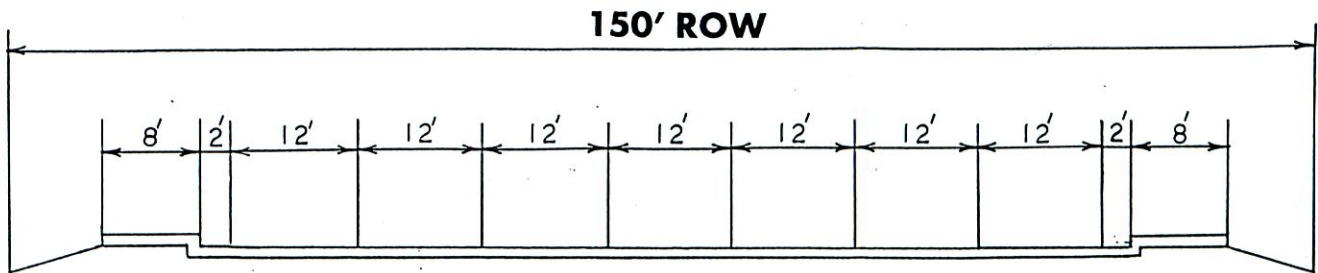
**US 158**

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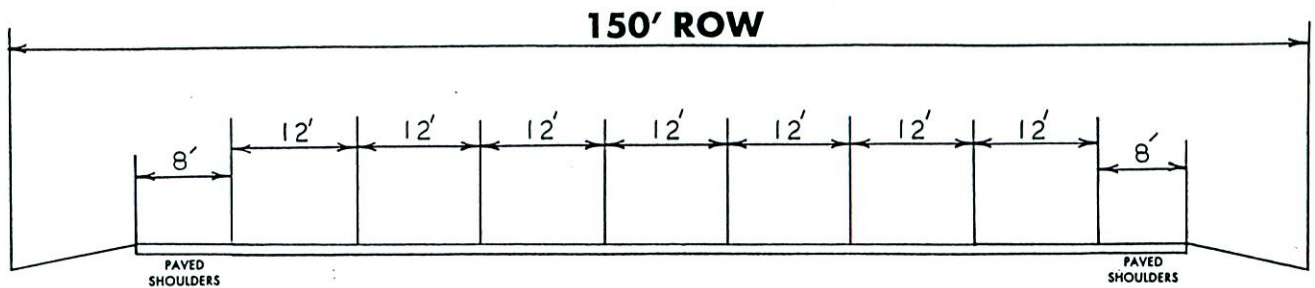
**DIVISION 1    R-3419    FIGURE 1**



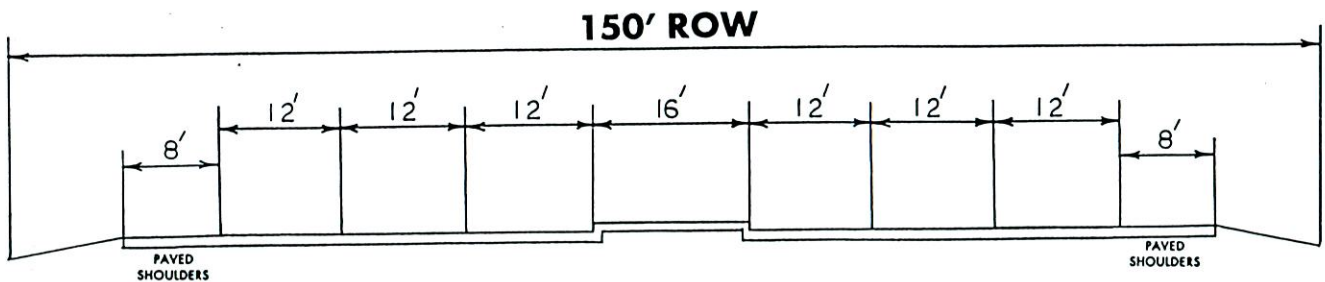
## Proposed Cross-Sections



**7-LANE CURB & GUTTER**



**7-LANE SHOULDER SECTION**



**6-LANE MEDIAN-DIVIDED SHOULDER SECTION**

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DIVISION 1

R-3419

FIGURE 2



## Development and Cross-Sections

Segment From & To	Development		Roadway Cross-Section	
	East Side of Roadway	West Side of Roadway	Existing	Proposed
US 64/264 to Flicker Street	Commercial	Commercial	5-lane Shoulder	7-lane Shoulder
Flicker Street to Forbes Street	Undeveloped	Undeveloped	5-lane Shoulder	7-lane Shoulder
Forbes Street to Baymeadow Drive	Commercial	Commercial	5-lane Shoulder	7-lane Shoulder
Baymeadow Drive to Sea Chase Drive	Undeveloped	Undeveloped	5-lane Shoulder	6-lane Median Divided Shoulder
Sea Chase Drive to Outer Banks Mall	Undeveloped	Commercial	5-lane Shoulder	6-lane Median Divided Shoulder
Outer Banks Mall to Dunn Street	Undeveloped	Residential	5-lane Shoulder	6-lane Median Divided Shoulder
Dunn Street to Danube Avenue	Commercial	Residential	5-lane Shoulder	6-lane Median Divided Shoulder
Danube Avenue to West Deering Street	Undeveloped	Undeveloped	5-lane Shoulder	6-lane Median Divided Shoulder
West Deering Street to Roanoke Street	Undeveloped	Residential	5-lane Shoulder	6-lane Median Divided Shoulder
Roanoke Street to Dune Street	Commercial	Undeveloped	5-lane Shoulder	6-lane Median Divided Shoulder
Dune Street to Soundside Road	Undeveloped	Undeveloped	5-lane Shoulder	6-lane Median Divided Shoulder
Soundside Road to Conch Street	Commercial	Undeveloped	5-lane Shoulder	6-lane Median Divided Shoulder
Conch Street to Woodhill Drive	Undeveloped	Undeveloped	5-lane Shoulder	6-lane Median Divided Shoulder
Woodhill Drive to Driftwood Street	Commercial	Commercial	5-lane Shoulder	7-lane Curb & Gutter
Driftwood Street to Goddard Avenue	Commercial	Commercial	5-lane Curb & Gutter	7-lane Curb & Gutter
Goddard Avenue to Ocean Bay Blvd	Residential	Commercial	5-lane Curb & Gutter	7-lane Curb & Gutter
Ocean Bay Boulevard to Porthole Court	Residential	Undeveloped	5-lane Shoulder	7-lane Curb & Gutter
Porthole Court to Third Street	Residential	Commercial	5-lane Shoulder	7-lane Curb & Gutter
Third Street to Fourth Street	Undeveloped	Commercial	5-lane Curb & Gutter	7-lane Curb & Gutter
Fourth Street to Fifth Street	Commercial	Residential	5-lane Curb & Gutter	7-lane Curb & Gutter
Fifth Street to Sportsman Drive	Residential	Residential	5-lane Curb & Gutter	7-lane Curb & Gutter
Sportsman Drive to Helga Street	Commercial	Commercial	5-lane Curb & Gutter	7-lane Curb & Gutter
Helga Street to Cameron Street	Residential	Commercial	5-lane Curb & Gutter	7-lane Curb & Gutter
Cameron Street to Tateway Road	Residential	Commercial	5-lane Shoulder	7-lane Curb & Gutter
Tateway Road to Worthington Drive	Commercial	Commercial	5-lane Shoulder	7-lane Curb & Gutter
Worthington Drive to Eckner Street	Residential	Residential	5-lane Shoulder	7-lane Curb & Gutter
Eckner Street to Luke Street	Commercial	Commercial	5-lane Shoulder	7-lane Curb & Gutter
Luke Street to Golf Villa Drive	Residential	Commercial	5-lane Shoulder	7-lane Curb & Gutter
Golf Villa Drive to Putter Lane	Residential	Residential	5-lane Shoulder	7-lane Curb & Gutter

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DIVISION 1	R-3419	FIGURE 3